

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1-11. (cancelled)

1 12. (previously presented) A method for marking a hydrocarbon liquid comprising the steps
2 of:

3 adding a first marker to the hydrocarbon liquid having a molar absorptivity of
4 approximately 5 times $10^4 \text{ L mole}^{-1} \text{ cm}^{-1}$ or greater in the wavelength range of about 600-1000
5 nm; and

6 adding to the hydrocarbon liquid a second marker wherein the second marker is a
7 molecular marker, and wherein a molecular weight of the second marker is artificially enhanced
8 with a non-radioactive isotope.

1 13. (previously presented) The method of claim 12 wherein the liquid is a petroleum
2 product.

1 14. (previously presented) The method of claim 12 wherein the desired concentration of the
2 first marker is between 1 ppb and 10 ppb.

1 15. (previously presented) The method of claim 12 wherein the first marker contains a
2 compound selected from the group consisting essentially of metal containing and metal free
3 phthalocyanine, metal containing and metal free naphthalocyanine, squarilium, croconic acid,
4 indole and substituted indole cyanine and carbocyanine, thiazole type cyanine and carbocyanine,
5 oxazole type cyanine and carbocyanine, metal dithiolene complexes, and indoaniline metal
6 complexes.

16. (cancelled)

1 17. (previously presented) The method of claim 12 wherein the second marker is a
2 polynuclear aromatic hydrocarbon.

1 18. (previously presented) The method of claim 12 wherein the second marker is a
2 halogenated hydrocarbon.

1 19. (previously presented) The method of claim 12 wherein the second marker is selected
2 from the group consisting essentially of 1,2-diphenylbenzene, 1,4-diphenylbenzene,
3 triphenylmethane, 1,3,5-triphenylbenzene, 1,1,2-triphenylethylene, tetraphenylethylene, 1,2,3,4-
4 tetrahydrocarbazole, 1,3-diphenylacetone, 2-chlorobenzophenone, 4,4'-dichlorobenzophenone; 4-
5 benzoylphenone; 4-bromobenzophenone, 4-methoxybenzophenone, 4-methylbenzophenone, 9-
6 fluorenone, 1-phenylnaphthalene, 3,3'-dimethoxybiphenyl, and 9-phenylanthracene.

20. (cancelled)

1 21. (previously presented) The method of claim 12 wherein the molecular weight is
2 enhanced by the addition of a deuterium atom.

1 22. (previously presented) The method of claim 12 wherein the second marker is selected
2 from the group consisting essentially of acetone, acetonitrile, benzene, bromobenzene,
3 chlorobenzene, chloroform, cyclohexane, dichlorobenzene, trichloroethylene, diethylether,
4 diglyme, dimethylsulfoxide, dioxane, ethanol, methanol, methylene chloride, nitrobenzene,
5 octane, pyridine, tetrachloroethane, tetrahydrofuran, tetrametholsilane, toluene, trifluoroacetic
6 acid, trifluoroethyl alcohol, xylene, ammonium bromide, and acetyl chloride.

1 23. (previously presented) A method for marking a hydrocarbon liquid comprising the steps
2 of:

3 adding a first marker to the hydrocarbon liquid having a molar absorptivity of
4 approximately $5 \times 10^4 \text{ L mole}^{-1} \text{ cm}^{-1}$ or greater in the wavelength range of about 600-1000

5 wherein the first marker contains a compound selected from the group consisting essentially of
6 metal containing and metal free phthalocyanine, metal containing and metal free
7 naphthalocyanine, squarilium, croconic acid, indole and substituted indole cyanine and
8 carbocyanine, thiazole type cyanine and carbocyanine, oxazole type cyanine and carbocyanine,
9 metal dithiolene complexes, and indoaniline metal complexes; and

10 adding a second marker to the hydrocarbon liquid wherein the second marker is selected
11 from the group consisting essentially of 1,2-diphenylbenzene, 1,4-diphenylbenzene,
12 triphenylmethane, 1,3,5-triphenylbenzene, 1,1,2-triphenylethylene, tetraphenylethylene, 1,2,3,4-
13 tetrahydrocarbazole, 1,3-diphenylacetone, 2-chlorobenzophenone, 4,4'-dichlorobenzophenone; 4-
14 benzoylphenone; 4-bromobenzophenone, 4-methoxybenzophenone, 4-methylbenzophenone, 9-
15 fluorenone, 1-phenylnaphthalene, 3,3'-dimethoxybiphenyl, and 9-phenylanthracene.

1 24. (previously presented) The method of claim 23 wherein the liquid is a petroleum product.

1 25. (previously presented) The method of claim 23 wherein the desired concentration of the first
2 marker is between 1 ppb and 10 ppm.

26-50. (cancelled)

1 51. (previously presented) A liquid marker compound comprising:

2 a first marker having a molar absorptivity of approximately $5 \times 10^4 \text{ L mole}^{-1} \text{ cm}^{-1}$ or
3 greater in the wavelength range of about 600 to 1000 nm; and

4 a second marker wherein the second marker is a molecular marker, and wherein a
5 molecular weight of the second marker is artificially enhanced with a non-radioactive isotope.

1 52. (previously presented) A liquid marker of claim 51 wherein a desired concentration of
2 the first marker is between 1 ppb and 10 ppm.

1 53. (previously presented) The liquid marker of claim 51 wherein the first marker produces a

characteristic peak at a known wavelength.

54. (previously presented) The liquid marker of claim 51 wherein the first marker contains a compound selected from the group consisting essentially of metal containing and metal free phthalocyanine, metal containing and metal free naphthalocyanine, squarilium, croconic acid, indole and substituted indole cyanine and carbocyanine, thiazole type cyanine and carbocyanine, oxazole type cyanine and carbocyanine, metal dithiolene complexes, and indoaniline metal complexes.

55. (previously presented) A liquid marker of claim 51 wherein the second marker is a polynuclear aromatic hydrocarbon.

56. (previously presented) The liquid marker of claim 51 wherein the second marker is a halogenated hydrocarbon.

57. (previously presented) The liquid marker of claim 51 wherein the second marker is selected from the group consisting essentially of 1,2-diphenylbenzene, 1,4-diphenylbenzene, triphenylmethane, 1,3,5-triphenylbenzene, 1,1,2-triphenylethylene, tetraphenylethylene, 1,2,3,4-tetrahydrocarbazole-, 1,3-diphenylacetone, 2-chlorobenzophenone, 4,4'-dichlorobenzophenone; 4-benzoylphenone; 4-bromobenzophenone, 4-methoxybenzophenone, 4-methylbenzophenone, 9-fluorenone, 1-phenylnaphthalene, 3,3'-dimethoxybiphenyl, and 9-phenylanthracene.

58. (cancelled)

59. (currently amended) The liquid marker of claim ~~58~~ 51 wherein the ~~molecular weight is enhanced by the addition of a deuterium atom~~ non-radioactive isotope is deuterium.

60. (previously presented) The liquid marker of claim 51 wherein the second marker is selected from the group consisting essentially of acetone, acetonitrile, benzene, bromobenzene,

chlorobenzene, chloroform, cyclohexane, dichlorobenzene, trichloroethylene, diethylether, diglyme, dimethylsulfoxide, dioxane, ethanol, methanol, methylene chloride, nitrobenzene, octane, pyridine, tetrachloroethane, tetrahydrofuran, tetrametholsilane, toluene, trifluoroacetic acid, trifluoroethyl alcohol, xylene, ammonium bromide, and acetyl chloride.

61. (currently amended) A liquid marker compound comprising:

a first marker having a molar absorptivity of approximately $5 \times 10^4 \text{ L mole}^{-1} \text{ cm}^{-1}$ or greater in the wavelength range of about 600 to 1000 nm, wherein the presence of the first molecular marker can be determined by a handheld IR spectrometer; and

a second marker wherein the second marker is a molecular marker, wherein a molecular weight of the second marker is artificially enhanced with a non-radioactive isotope.

62-68. (cancelled)